

## TELESCOPIC VIEWS OF SCRIPTURE.

No kind of knowledge is more useful to man than the knowledge of his own ignorance; and no instrument has done more to give him such knowledge than the telescope. Faith is the believing of facts we do not know, upon the word of one who does. If any one knows every thing, or thinks he does, he can have no faith. A deep conviction of our own ignorance is, therefore, indispensable to faith. The telescope gives us this conviction, in two ways. It shows us that we see a great many things we do not perceive, tells us the size and the distances of those little sparks that adorn the sky, and leads us to reason out their true relations to our earth. Then it tells us that what we see is little of what is to be seen; that our knowledge is but a drop from the great ocean—a rush-light, sparkling in the vast darkness of the unknown. It tells us that we do not see right, and that we do not see far; and that there may be things, both in heaven and earth, not dreamed of in our philosophy. Further, it confirms the Bible testimony concerning the facts of its own province, by removing all improbability from some of its most wonderful narratives, attesting the accuracy of its language, and confirming, by some of its most recent discoveries, the truth of its statements. Our space will only allow us to select five illustrations of the tendency of faith in the telescope, to produce faith in the Bible.

1. One of the latest astronomical discoveries throws light upon one of the most ancient scientific allusions of the Bible, and one which has perplexed both commentators and geologists: *that which hints at the second causes of the deluge*. Not that it is at all needful for us to be able to tell where God Almighty procured the water to drown the ungodly sinners of the old world, before we believe his word that he did so; unless, indeed, somebody has explored the universe, and knows that there is not water enough in it for that purpose, or that it is so far away that he could not fetch it; for, as to the fact itself, geology assures us that all the dry land on earth has been drowned, not only once, but many times. It is not the province of the commentator, but of the geologist, to account for the phenomenon.

Several solutions of the difficulty of finding water enough for the purpose have been proposed. One of these supposes that, as the earth is known by its density not to be solid, some of its internal caverns are filled with water, which, when heated by neighboring volcanic fires, would expand one twenty-third of its bulk, and flow out, and raise the ocean. When the volcanic fire was burnt out, and the water cooled, it would of course contract to its former dimensions, and the ocean recede. These caverns they suppose to be meant by "the fountains of the great deep," in Genesis vii: 11.

But the Bible describes another, and plainly a very important source of the waters of the deluge, in the rain which fell for forty days and forty nights. At present, all the water in our atmosphere comes from the sea, by evaporation; and the quantity is too insignificant to cover the globe to any considerable depth. Divines and philosophers were perplexed to give any adequate explanation of this language, and considered it simply as Noah's description of the appearance of things as viewed from the ark, rather than an accurate explanation of the actual causes of the deluge. Now, it is certainly true, that the Bible does describe things as they appear to men. It is, however, beginning to be discovered, that these popular appearances are far more closely connected with philosophical reality than a self-sufficient pedantry will allow. Our purblind astronomy and prattling geology may be as inadequate to expound the mysteries of the Bible philosophy, as was the incoherent science of Strabo and Ptolemy. The experience of another planet, now transacting before our eyes, admonishes us not to limit the resources of Omnipotence by our narrow experience, or to suppose that our young science has catalogued all the weapons in the arsenal of the Almighty.

The planet Saturn is surrounded by a revolving belt, consisting of several distinct rings, containing an area a hundred and forty-six times greater than the surface of our globe, with a thickness of a hundred miles. From mechanical considerations it had been proved that these rings could not be of a uniform thickness all around, else when a majority of his seven moons were on the same side, the attraction would draw them in upon him, on the opposite side; and once attracted to his surface, they could never get loose again, if they were solid.\* It was next ascertained that the mo-

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\* Kendall's Uranography, 268.

tions of the moons and of the rings were such, that if the inequality was always in the same place, the same result must follow; so that the ring must be capable of changing its thickness, according to circumstances. It must be either composed of an immense number of small solid bodies, capable of shifting freely about among themselves, or else be fluid. Finally, it has been demonstrated that this last is the fact; that the density of this celestial ocean is nearly that of water; and that the inner portion, at least, is so transparent, that the planet has been seen through it.\* “The ring of Saturn is, then, a stream or streams of fluid, rather denser than water, flowing about the primary.”† The extraordinary fact, which shows us how God can deluge a planet when he pleases, I give not in the words of a divine, but of a philosopher, whose thoughtless illustration of scripture is all the more valuable, that it is evidently unintentional.

“M. Otto Struve, Mr. Bond, and Sir David Brewster, are agreed that Saturn’s third ring is fluid, that it is not of very recent formation, and that it is not subject to rapid change. And they have come to the extraordinary conclusion, that the inner border of the ring has, since the day of Huygens, been gradually approaching to the body of Saturn, and that we may expect, sooner or later—perhaps in some dozen years—to see the rings united with the body of the planet. *With this deluge impending, Saturn would scarcely be a very eligible residence for men, whatever it might be for dolphins.*”‡

Knowing, as we most certainly do, that the fluid envelopes of our own planet were once exceedingly different from the present,§ here is a possibility quite sufficient to stop the mouth of the scoffer. Let him show that God did not, or prove that he could not, suspend a similar series of oceans over the earth, or cease to pronounce a universal deluge impossible.

2. That sublime ode, in which Deborah describes *the stars in their courses as fighting against Sisera*,|| has been rescued from the grasp of modern scoffers and impostors, by the progress of astronomy. By both these classes has it been alleged as lending its support to the delusions of judicial astrology; the one class desiring to damage the Bible as a teacher of superstition, and the

\* Annual of Scientific Discovery, 1856, p. 380.

† Ib., 1856, p. 377.

‡ Cosmos, vol. 1, pp. 198-215.

§ Ib., 1852, p. 376.

|| Judges, 5.

other to help their trade by pleading its authority. The Bible reader will doubtless be greatly surprised to hear it asserted, that the Bible lends its sanction to this antiquated, and, as he thinks, exploded superstition. He knows how expressly the Bible forbids God's people to have any thing to do with it, or with its heathenish professors. "Thus saith the Lord, Learn not the way of the heathen, and be not dismayed at the signs of heaven, for the heathen are dismayed at them."\* And they will be still more surprised to learn, that those who object against the Bible, that it ascribes a controlling influence to the stars, are firm believers in Reichenbach's discovery of *odyle*: an influence from the heavenly bodies so spiritual and powerful, that they imagine it able to govern the world, instead of God Almighty.†

The passage thus variously abused is a description, in highly poetic strains, of the battle between the troops of Israel and those of Sisera: of the defeat of the latter, and of an earthquake and tempest, which completed the destruction of his exhausted troops. The glory of the victory is wholly ascribed to the Lord God of Israel; while the rain, the thunder, lightning, swollen river, and "the stars in their courses," are all described, in their subordinate places, as only his instruments—the weapons of his arsenal.

"Lord, when thou wentest out of Seir,

\* Jeremiah, 10.

† Some of my readers may deem any notice of such a subject, in the nineteenth century, entirely unnecessary; but having lived for some years within sight of the dwelling of a woman who publicly advertised herself in the newspapers as a professor of astrology, and seen the continual flow of troubled minds to the promised light—the humble serving-girl stealing up the side entrance, and the princely chariot discharging its willing dupes at the door, and rolling hastily away, to await them at the corner—I know of a certainty that folly is not yet dead. There are women—aye, and men too—who are above the folly of reading the Bible, but just wise enough to pay five dollars for, and spend hours in the study of, an uncouth astrological picture, representing a collocation of the stars, which was never witnessed by any astronomer—men who would not give way to the superstition of supposing that their destiny was regulated by the will of Almighty God, yet believe that every living creature's fate is regulated by the aspect of the stars at the hour of his nativity; the same stars always causing the same period of life and mode of death; though every day's experience testifies the contrary. The same stars presided over the birth of the poor soldier, who perished in an instant at Austerlitz; of his Imperial Master, who pined for years in St. Helena; of the old gentleman who died in his own bed, of gout; and of the batch of puppies, whereof old Towser was the only surviving representative, the other nine having found their fate in the horse-pond, in defiance of the controlling stars. They were all born at the same hour, and under the same auspices, and destined to the same fate, by the laws of astrology.

"When thou marchedst out of the field of Edom,  
 "The earth trembled, and the heavens dropped,  
 "The clouds also dropped down water;  
 "The mountains also melted from before the Lord,  
 "Even that Sinai, from before the Lord God of Israel."

Then, after describing the battle, she alludes to the celestial artillery, and to the effects of the storm in swelling the river, and sweeping away the fugitives who had sought the fords:

"They fought from heaven;  
 "The stars in their courses fought against Sisera;  
 "The river Kishon swept them away:  
 "That ancient river, the river Kishon." \*

After describing some further particulars, the hymn concludes with an allusion to the clearing away of the tempest, and the appearance of the unclouded Sun over the field of victory:

"So let all thine enemies perish, O, Lord;  
 "But let them that love thee be as the Sun, when he goeth forth  
 in his might."

Where is there the least allusion here to any controlling influence of the stars? You might just as well say, "The Bible ascribes a controlling influence over the destinies of men, to the river Kishon;" for they are both spoken of, in the same language, as instruments in God's hand for the destruction of his enemies.

But it is objected, "Even by this explanation you have the Bible representing the stars as causing the rain." Not so fast. If a man were very ignorant, and had never heard of any thing falling from the sky but rain, he might think so. And if the Bible did attribute to the stars some such influence over the vapors of the atmosphere, as experience shows the moon to possess over the ocean, are you able to demonstrate its absurdity?

Deborah, however, when she sang of the stars *in their courses* fighting against Sisera, was describing a phenomenon very different from a fall of rain—was, in fact, describing a fall of ærolites upon the army of Sisera. Multitudes of stones have fallen from the sky, and not less than five hundred such falls are recorded.

"On Sept. 1st, 1814, a few minutes before midday, while the sky was perfectly serene, a violent detonation was heard in the department of the Lot and Garonne. This was followed by three or four

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\* Judges, 5th ch.

others, and finally by a rolling noise, at first resembling a discharge of musketry, afterwards the rumbling of carriages, and lastly that of a large building falling down. Stones were immediately after precipitated to the ground, some of which weighed eighteen pounds, and sunk into a compact soil, to the depth of eight or nine inches; and one of them rebounded three or four feet from the ground."

"A great shower of stones fell at Barbatan, near Roquefort, in the vicinity of Bordeaux, on July 24th, 1790. A mass fifteen inches in diameter penetrated a hut and killed a herdsman and bullock. Some of the stones weighed twenty-five pounds, and others thirty pounds."

"In July, 1810, a large ball of fire fell from the clouds, at Shahabad, which burned five villages, destroyed the crops, and killed several men and women."\*

Astronomers are perfectly agreed as to the character of these masses, and the source whence they come. "It appears from recent astronomical observations that the Sun numbers among his attendants not only planets, asteroids, and comets; but also immense multitudes of meteoric stones and shooting stars."† Aerolites are, then, really stars. They are composed of materials similar to those of our earth: the only other star whose materials we can compare with them. They have a proper motion around the Sun, in orbits distinct from that of the earth. They are capable of emitting the most brilliant light, in favorable circumstances. Some of them are as large as the asteroids. One, of 600,000 tons weight, passed within 25 miles of the earth, at the rate of 20 miles a second. A fragment of it reached the earth.‡ "That aerolites were called *stars* by the ancients, is indisputable. Indeed, Anaxagoras considered the stars to be only stony masses, torn from the earth by the violence of rotation. Democritus tells us that invisible dark masses of stone move with the visible stars, and remain on that account unknown, but sometimes fall upon the earth, and are extinguished, as happened with the stony star which fell near Aegæos Potamos.§

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\* Dick's Celestial Scenery, p. 57, Applegate's edition, where many such instances are related.

† Vaughn's Report to the American Association for the advancement of Science, in Annual of Scientific Discovery for 1855, p. 364.

‡ Somerville's Connection of the Physical Sciences, 382.

§ Cosmos, vol. 1, p. 122; vol. 4, p. 569.

When Deborah, therefore, describes the *stars in their courses* as fighting against Sisera, it is an utterly unfounded assumption to suppose that she has any allusion to the baseless fancies of an astrology every-where condemned by the religion she professed, when a simple and natural explanation is afforded by the fact, that stars do fall from the heavens to the earth, and *that they do so in their courses*, and just by reason of their orbital motion; and that the ancients both knew the fact, and gave the right name to those bodies. Let no reasonable man delude himself with the notion that God has no weapons more formidable than the dotings of astrology, till he has taken a view of the arsenals of God's artillery, which he has treasured up against the day of battle and of war.

Here it may be well to notice the illustration which the remarkable showers of November meteors, particularly those of November, 1833, shed upon several much ridiculed texts of scripture. Scientific observation has fully confirmed and illustrated the scientific accuracy of the Bible in such expressions as, "the stars shall fall from heaven;" "there fell a great star from heaven, burning as it were a lamp;" "and the stars of heaven fell unto the earth, even as a fig-tree casteth her untimely figs, when she is shaken of a mighty wind." Whatever political or ecclesiastical events these symbols may signify, there can be no question, now, that the astronomical phenomenon used to prefigure them is correctly described in the Bible. Most of my readers have seen some of these remarkable exhibitions; but for the sake of those who have not, I give a brief account of one. "By much the most splendid meteoric shower on record, began at nine o'clock, on the evening of the 12th of November, 1833, and lasted till sunrise next morning. It extended from Niagara, and the northern lakes of America, to the south of Jamaica, and from 61° of longitude, in the Atlantic, to 100° of longitude in Central Mexico. Shooting stars and meteors of the apparent size of Jupiter, Venus, and even the full moon, darted in myriads towards the horizon, *as if every star in the heavens had darted from their spheres.*" They are described as having been as frequent as the flakes of snow in a snow-storm, and to have been seen with equal brilliancy over the greater part of the continent of North America.\*

The source whence these meteors proceed is distinctly ascer-

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\* Connection of the Physical Sciences, 383.

tained to be, as was already remarked with regard to the aerolites, a belt of small planetoids, revolving around the Sun in a little less than a year, and in an orbit intersecting that of the earth, at such an angle, that every thirty-three years, or thereabouts, the earth meets the full tide on the 12th of November. These meteors are true and proper stars. "All the observations made during the year 1853 agree with those of previous years, and confirm what may be regarded as sufficiently well established: the cosmical origin of shooting stars." \*

3. The language of the Bible with respect to *the circuit of the Sun* is found to have anticipated one of the most sublime discoveries of modern astronomy. True to the reality, as well as to the appearance of things, it is scientifically correct, without becoming popularly unintelligible.

There is a class of aspirants to gentility who refuse to recognize any person not dressed in the style which they suppose fashionable among the higher classes. A Glasgow butcher's wife, in the Highlands, attired in all the magnificence of her satins, laces, and jewelry, returned the courteous salute of the little woman in the gingham dress and gray shawl with a contemptuous toss of the head, and flounced past, to learn, to her great mortification, that she had missed an opportunity of forming an acquaintance with the Queen. So a large class of pretenders to science refuse to become acquainted with Bible truth, because it is not shrouded in the technicalities of science, but displays itself in the plain speech of the common people to whom it was given. They will have it, that because its author used common language, it was because he could not afford any other; and as he did not contradict every vulgar error believed by the people to whom he spoke, it was because he knew no better; and because the Hebrews knew nothing of modern discoveries in astronomy, geology, and the other sciences, and the Bible does not contain lectures on these subjects, the God of the Hebrews must have been equally ignorant, and the Bible consequently beneath the notice of a philosopher.

You will hear such persons most pertinaciously assert, that Moses believed all the absurdities of the Ptolemaic astronomy: that the earth is the immovable center, around which revolve the crystal sphere of the firmament, and the Sun, and Moon, and stars,

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\* Annual of Scientific Discovery, 1854, p. 361.



which are attached to it, after the manner of lamps to a ceiling; and that he, and the world generally in his day, had not emerged from the grossest barbarism and ignorance of all matters of natural science. Yet these very people will probably tell you, in the same conversation, of the wonderful astronomical observations made by the Egyptians, ten thousand years before the days of Adam! So beautiful is the consistency of infidel science. But when you enquire into the source of their knowledge of the philosophy of the ancients, you discover that they did not draw it from the writings of Moses, of which they betray the grossest ignorance, nor of any one who lived within a thousand years of Moses' time. Voltaire is their authority for all such matters. He transferred to the early Asiatics all the absurdities of the later Greek philosophers, and would have us believe that Moses, who wrote before these Greeks had learned to read, was indebted to them for his philosophy. Of the learning of the ancient patriarchs Voltaire does not tell them much, for a satisfactory reason.

Yet it might not have required much learning to infer, that the eyes, and ears, and nerves of men who lived ten times as long as we can, must have been more perfect than ours; that a man who could observe nature with such eyes, under a sky where Stoddart now sees the ring of Saturn, the crescent of Venus, and the moons of Jupiter, with the naked eye,\* and continue his observations for eight hundred years, would certainly acquire a better knowledge of the appearance of things than any number of generations of short-lived men, called away by death before they have well learned how to observe, and able only to leave the shell of their discoveries to their successors; that unless we have some good reason for believing that the mind of man was greatly inferior, before the flood, to what it now is, the antediluvians must have made a progress in the knowledge of the physical sciences, during the three thousand one hundred and fifty-five years which elapsed from the creation to the deluge, much greater than the nations of Europe have effected since they began to learn their A, B, C, about the same number of years ago; and that though Noah and his sons might not have preserved all the learning of their drowned contemporaries, they would still have enough to preserve them from the reproach of ignorance and barbarism; at least until their sons have succeeded in building

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\* Letter to Herschell, from Oroomiah, in Persia—*Annual of Scientific Discovery*, 1854, p. 367.

a larger ship than the ark, or a city which would not look contemptible in the suburbs of Babylon.

When we know that the Chaldeans taught the Egyptians the expansive power of steam, and the induction of electricity by pointed conductors;—that from the most remote antiquity the Chinese were acquainted with decimal fractions, electro-magnetism, the mariner's compass, and the art of making glass;—that lenses have been found in the ruins of Nineveh, and that an artificial currency was in circulation in the first cities built after the flood; \*—that astronomical observations were made in China, with so much accuracy, from the deluge till the days of Yau, B. C., 2357, that the necessary intercalations were made for harmonizing the solar with the lunar year, and fixing the true period of  $365\frac{1}{4}$  days;—and that similar observations were conducted to a like result within a few years of the same remote period, in Babylon;—if he does not conclude that the world may have forgotten as much ancient lore during eighteen hundred years of idolatrous barbarism before the coming of Christ, as it has learned in the same number since—will, at least, satisfy himself that the ancient patriarchs were not ignorant savages. † “Whole nations,” says La Place, “have been swept from the earth, with their languages, arts, and sciences, leaving but confused masses of ruins to mark the place where mighty cities stood. Their history, with a few doubtful traditions, has perished; *but the perfection of their astronomical observations marks their high antiquity, fixes the periods of their existence, and proves that even at that early time they must have made considerable progress in science.*” ‡ The infidel theory, that the first men were savages, is a pure fiction, refuted by every known fact of their history.

That, however, is not the matter under discussion. We are not enquiring, now, what Moses and the prophets *thought*, but what the author of the Bible *told them to say*. The scribe writes as his

\* “These tablets (of unbaked clay, with inscriptions, found in the tombs of Erech, the city of Nimrod—Gen. 10: 10—and deciphered by Rawlinson,) were, in point of fact, the equivalent of our bank notes, and prove that a system of artificial currency prevailed in Babylon and Persia at an unprecedentedly early age: centuries before the introduction of paper and writing.

Rawlinson, in *News of the Churches*, February, 1857, p. 50.

† Wilkinson's *Manners and Customs of the Egyptians*, vol. 3, p. 106; *Cosmos*, vol. 1, pp. 173, 182; *Chinese Repository*, v. 9, p. 573; *Williams' Middle Kingdom*, vol. 2, p. 147.

‡ *Connection of Physical Sciences*, 82.

employer dictates. "I will put my words in thy mouth," said God to Jeremiah. "My tongue is as the pen of a ready writer," said David. The prophets began, not with "Thus saith Isaiah," but "Thus saith the Lord." Unless the Word of God was utterly different from all his other works, it must transcend the comprehension of man in some respects. The profoundest philosopher is as ignorant of the cause of the vegetation of wheat, as the mower who cuts it down; but their ignorance of the mysteries of organic force is no reason why the one may not harvest, and the other eat and live. Just so God's prophets conveyed precious mysteries to the Church, of the full import of which they themselves were ignorant; even as Daniel heard but understood not; and the prophets to whom it was revealed that they did not minister to themselves, but to us, enquired and searched diligently into the meaning of their own prophecies; which meaning, nevertheless, continued hid for ages and generations.\* If the prophets of the old economy might be ignorant of the privileges of the gospel day, of which they prophesied, at God's dictation, they might very well be ignorant, also, of the philosophy of creation, and yet write a true account of the facts, from his mouth.

Let us suppose, then, that the ancient Hebrews and their prophets were, if not quite as ignorant of natural science as modern infidels are pleased to represent them, yet unacquainted with the discoveries of Herschell and Newton; and, as a necessary consequence, that their language was the adequate medium of conveying their imperfect ideas, containing none of the technicalities invented by philosophers to mark modern scientific discoveries; and that God desired to convey to them some religious instruction, through the medium of language. Must we suppose it indispensable for this purpose that he should use strange words, and scientific phrases, the meaning of which would not be discovered for thirty-three hundred years? Could not Dr. Alexander write a sabbath-school book, without filling it full of such phrases as "right ascension," "declination," "precession of the equinoxes," "radius vector," and the like? Or, if some wiseacre did prepare such a book, would it be very useful to children? Perhaps even we, learned philosophers of the nineteenth century, are not out of school yet. How many discoveries are yet to be made in all the

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\* Dan. 12: 8; 1 Pet. 1: 10; Eph. 1: 3.

sciences: discoveries which will doubtless render our fancied perfection as utterly childish to the philosophers of a thousand years hence, as the astronomy of the Greeks seems to us; and demand the use of technical language, which would be as unintelligible to us as our scientific nomenclature would have been to Aristotle. If God may not use popular speech in speaking to the people of any given period, but must needs speak the technical language of perfect science,—and if science is now, and always will be, of necessity, imperfect,—we are led to the sage conclusion, that every revelation from God to man must always be unintelligible!

Does it necessarily follow, that because the author of the Bible uses the common phrases, “sun rising,” and “sun setting,” in a popular treatise upon religion, that therefore he was ignorant of the rotation of the earth, and intended to teach that the Sun revolved around it? He is certainly under no more obligation to depart from the common language of mankind, and introduce the technicalities of science into such a discourse, than mankind in general, and our objectors in particular, are to do the like in their common conversation. Now, I demand to know whether they are aware that the earth’s rotation on its axis is the cause of day and night? But do you ever hear any of them use such phrases as “earth rising,” and earth setting?” But if an infidel’s daily use of the phrases, “*sun rising*,” “*sun setting*,” and the like, does not prove, either that he is ignorant of the earth’s rotation as the cause of that appearance, or that he intends to deceive the world by those phrases, why may not Almighty God be as well informed and as honest as the infidel, though he also condescends to use the common language of mankind.

Do you ever hear astronomers, in common discourse, use any other language? I suppose Lieut. Maury, and Herschell, and Leverrier and Mitchell, know a little of the earth’s rotation; but they, too, use the English tongue very much like other people, and speak of sunrise and sunset; yet nobody accuses them of believing in the Ptolemaic astronomy. Hear the immortal Kepler, the discoverer of the laws of planetary revolution: “We astronomers do not pursue this science with the view of altering common language; but we wish to open the gates of truth, without affecting the vulgar modes of speech. We say with the common people, “The planets stand still, or go down;” “the sun rises, or sets;” meaning only that so the thing appears to us, although it is not truly so, as all

astronomers are agreed. How much less should we require that the Scriptures of Divine Inspiration, setting aside the common modes of speech, should shape their words according to the model of the natural sciences, and by employing a dark and inappropriate phraseology about things which surpass the comprehension of those whom it designs to instruct, perplex the simple people of God, and thus obstruct its own way towards the attainment of the far more exalted end to which it aims."

It is evident, then, that God not only may, *but must* use popular language in addressing the people, in a work not professedly scientific; and that if this popular language be scientifically incorrect, such use of it neither implies his ignorance or approval of the error.

But it may be worthy of enquiry whether this popular language of mankind, used in the Bible, be scientifically erroneous. If the language be intended to express an absolute reality, no doubt it is erroneous to say the sun rises and sets; but if it be only intended to describe an appearance, and the words themselves declare that intention, it cannot be shown to be false to the fact. Now, when the matter is critically investigated, these phrases are found to be far more accurate than those of "earth rising," and "earth setting," which infidels say the author of the Bible should have used. For, as up and down have no existence in nature, save with reference to a spectator, and as the earth is always down with respect to a spectator on its surface, neither rising towards him, nor sinking from him, in reality, nor appearing to do so, unless in an earthquake, the improved phrases are false, both to the appearance of things, and to the cause of it. Whereas, our common speech, making no pretensions to describe the causes of appearances, cannot contradict any scientific discovery of these causes, and therefore cannot be false to the fact, while it truly describes all that it pretends to describe—the appearance of things—to our senses. And so, after all the outcry raised against it by sciolists, the vulgar speech of mankind, used by the Author of the Bible, must be allowed to be philosophical enough for his purpose, and theirs: at least till somebody favors both with a better.

Though we are in no way concerned, then, to prove that every poetical figure in Scripture, and every popular illustration taken from nature, corresponds to the accuracy of scientific investigation, before we believe the Bible to be a revelation of our duty to God

and man, yet it may be worth while to enquire, further, whether we really find upon its sacred pages such crude and egregious scientific errors as infidels allege. We have seen in the last Tract, that they are not able to read even its first chapter without blundering. Indeed, they generally boast of their ignorance of its contents. It is a very good rule to take them at their word, and when they quote Scripture, to take it for granted *that they quote it wrong*, unless you know the contrary. The first thing for you to do when an infidel tells you the Bible says so and so, is to get the book, and see whether it does or not. You will generally find that he has either misquoted the words, or mistaken their meaning, from a neglect of the context; or perhaps has both misquoted and mistaken. Then, when you are satisfied of the correct meaning of the text, and he tells you that it is contrary to the discoveries of science, the next point is to ask him, *How do you know?* You will find his knowledge of science and scripture about equal. Both these tests should be applied to scientific objections to the Bible, as they are all composed of equal parts of Biblical blunders and philosophical fallacies.

In the objection under consideration, for instance, both statements are wrong. The Bible does not represent the earth as the immovable center of the universe, or as immovable in space at all. It does not represent the Sun and stars as revolving around it. Nor are the facts of astronomy more correctly stated. It is not the Bible, but our objector, that is a little behind the age in his knowledge of science.

If we enquire for those texts of Scripture which represent the earth as the immovable center of the universe, we shall be referred to the figurative language of the Psalms, the book of Job, and other poetical parts of Scripture, which speak of the "foundations of the earth," "the earth being established," "abiding for ever," and the like, when the slightest attention to the language would show *that it is intended to be figurative*. The accumulation of metaphors and poetical images in some of these passages, is beautiful and grand in the highest degree; but none, save the most stupid reader, would ever dream of interpreting them literally. Take, for instance, Psalm 104: 1-6, where, in one line, the world is described as God's house, with beams, and chambers, and foundations; but in the very next line the figure is changed, and it is viewed as an infant, covered with the deep, as with a garment.

"Bless the Lord, O my soul.  
 "O Lord my God thou art very great;  
 "Thou art clothed with honor and majesty:  
 "Who coverest thyself with light, as with a garment:  
 "Who stretchest out the heavens like a curtain:  
 "*Who layeth the beams of his chambers upon the waters:*  
 "Who walketh upon the wings of the wind:  
 "Who maketh his angels spirits:  
 "His ministers a flaming fire:  
 "*Who laid the foundations of the earth,*  
 "*That it should not be removed for ever.*  
 "Thou coveredst it with the deep, as with a garment:  
 "The waters stood above the mountains."

But if any one is so gross as to insist on the literality of such a passage, and to allege that it teaches the absolute immobility of the earth, let him tell us what sort of immobility the 3d verse teaches, and how a building could be stable, the beams of whose chambers are *laid upon the waters*—the chosen emblems of instability. "He hath founded it upon the seas: he hath established it upon the floods," says the same poet, in another Psalm: 24: 1. This, and all other expressions quoted as declaring the immobility of the earth *in space*, are clearly proved, both by the words used, and the sense of the context, to refer to an entirely different idea: namely, *its duration in time*. Thus, Eccl. 1: 4, "One generation passeth away, and another cometh; but the earth abideth for ever," is manifestly contrasting the duration of earth with the generations of short-lived men, and has no reference to motion in space at all.

Again, in Psalm 119: 89-91, our objectors find another Bible declaration of the immobility of the earth in space:

"For ever, O Lord, thy word is settled in heaven;  
 "Thy faithfulness is unto all generations;  
 "Thou hast established the earth, and it abideth.  
 "*They continue to this day, according to thine ordinances."*

The same permanence is here ascribed to the heavens (to which, as our objectors argue, the Bible ascribes a perpetual revolution) as to the earth. The next verse explains this permanence to be *continuance to this day*: durability, not immobility. That the word establish does not necessarily imply fixture, is evident from its application, in Prov. 8: 28: "He *established* the clouds," the most fleeting of all things. Nor is the Hebrew word, *kun* (whence our

English word, cunning), inconsistent with motion ; else, the Psalmist had not said that "a good man's footsteps are *established* by the Lord." \* "He *established* my goings." Wise arrangement is the idea, not permanent fixture.

The same remarks apply to Psalm 93 : 1,—96 : 10,—1 Chron. 16 : 30, and many other similar passages.

"The world is established, that it cannot be moved ;

"Thy throne is established of old :

"Thou art from everlasting."

Where the establishment, which is contrasted with the impossible removal, and which explains its import, is evidently not a local fixing of some material seat, in one place, but the everlasting duration of God's authority. The idea is not that of position in space, at all, but continued duration.

Space does not allow us to quote all the passages which refer to this subject ; but after an examination of every passage in the Bible usually referred to in this connection, and of a multitude of others bearing upon it, I have no hesitation in saying, that it does not contain a single text which asserts or implies the immobility of the earth in space. The notion was drawn from the absurdities of the Greek philosophy, and the superstitions of Popery, but was never gathered from the word of God.

But it is alleged that other passages of scripture do plainly and unequivocally express the motion of the Sun, and his course in a circuit ; as, for instance, the nineteenth Psalm :

"In them he hath set a tabernacle for the Sun,

"Which is as a bridegroom coming out of his chamber,

"And rejoiceth as a strong man to run a race.

"His going forth is from the end of heaven,

"And his circuit unto the ends of it."

And again, in the account of Joshua's miracle, in the tenth chapter of his book, it is quite evident that the writer supposed the Sun to be in motion, in the same way as the Moon, for he commanded them both to stand still : "Sun, stand thou still upon Gibeon, and thou Moon in the valley of Ajalon. And the Sun stood still, and the Moon stayed, until the people had avenged themselves upon their enemies." Now, it is said, if the writer had known what he was about, he would have known that the Sun

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\* Ps. 40 : 1, and 37 : 23, margin.



was already standing still, and would have told the earth to stop its rotation. And if the earth had obeyed the command, we should never have heard of the miracle; for, as the earth rotates at the rate of a thousand miles an hour, the concussion produced by such a stoppage would have projected Joshua, and Israelites, and Amorites, beyond the Moon, to pursue their quarrel among the fixed stars.

When we hear men of some respectability bring forward such stuff, we are constrained to wonder, not merely were they ever at school, but if they ever traveled in a railroad car, or whether they suppose their hearers to be so ignorant of the most common facts, as to believe that there is no way of bringing a carriage to a stand but by a sudden jerk, or that God is more stupid than the brakesman of an express train. We will do them the justice, however, to say, that they did not invent it, but merely shut their eyes, and opened their mouths, and swallowed it for philosophy, because they found it in the writings of an infidel scoffer, and of a Neological professor of theology\*—an edifying example of infidel credulity!

Let it be noticed, that in neither of these texts, nor in any other portion of scripture, does the Bible say a single word about the revolution of the Sun *round the earth*, as the common center of the universe; on which, however, the whole stress of the objection is laid. The passages do not prove what they are adduced to prove. They speak of the Sun's motion, and of the Sun's orbit, *but they do not say that the earth is the center of that orbit*. These texts, then, do not prove the author of the Bible ignorant of the system of the universe.

The objection is based upon utter ignorance of one of the most important and best attested discoveries of modern astronomy: the grand motion of the Sun and Solar System through the regions of space, and the dependence of the rotation of all the orbs composing it, upon that motion. It is not the author of the Bible who is ignorant of the discoveries of modern astronomy—when he speaks of the orbit of the Sun, and his race from one end of the heavens to the other, and of the need of a miraculous interposition to stop his course for a single day—but his correctors, who have ventured to decry the statements of a book which commands the respect of such astronomers as Herschell and Rosse, while ignorant of those

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\* M. Voltaire; M. Cheneviere; Theol. Essays, vol. 1, p. 456.

elements of astronomy which they might have learned from a perusal of the books used by their children, in our common schools. For the benefit of such, however, I will present a brief explanation of the grounds upon which astronomers are as universally agreed upon the belief of the Sun's motion around a center of the firmament, as they are upon the belief of the revolution of the earth round the Sun.

When you are passing in a carriage, at night, through the street of a city lighted up by gas-lamps in the streets, and lights irregularly dispersed in the windows, or passing in a ferry-boat, from one such city to another, at a short distance from it, you observe that the lights which you are leaving appear to draw closer and closer together, while those towards which you are approaching widen out, and seem to separate from each other. If the night were perfectly dark, so that you could see nothing but the lights, you could certainly know not only that you were in motion, but also to what point you were moving, by carefully watching their appearances. So, if all the fixed stars were absolutely fixed, and the Sun and planets, including our earth, were moving in any direction—say to the north—then the stars towards which we were moving would seem to widen out from each other, and those which we were leaving would seem to close up; so that the space which appeared between any two stars in the south, in a correct map of the heavens, a hundred years ago, would be smaller, and that between any two stars in the north would be larger, than the space between the same stars upon a correct map now. Now, such changes in the apparent positions of stars are actually observed. The stars do not appear in the same places now as they did a hundred years ago.

The fixed stars, then, are either drifting past our Solar System, which alone remains fixed; or, the fixed stars are all actually at rest, and our Sun is drifting through them; or, our Solar System and the so called fixed stars are both in motion. One or other of these suppositions must be the fact. The first is simply the old Ptolemaic absurdity, only transferring the center of the universe to the Sun. The second is contrary to the observed fact, that multitudes of the stars which were supposed to be fixed, are actually revolving around each other, in systems of double, triple, and multiple suns. And both are contrary to the first principles of gravitation; for, as every particle of matter attracts every other, directly

as the mass, or inversely as the square of the distance, if any one particle of matter in the universe is in motion, the square of its distance from every other particle varies, and its attraction is increased in one direction, and diminished in another; and so every particle of matter in free space, as far as the force of gravitation extends, will be put in motion too. But our earth, and the planets, and the double and triple stars, are in motion, and the law of gravitation extends to every known part of the universe; therefore, every known particle of matter in the universe is in motion too, our Sun included.

The third supposition, then, is most indisputably true: our Solar System, and all the heavenly bodies, are in motion. To this conclusion all the observed facts conform. The Bible does say that the Sun moves, and moves in a curve. All mathematicians prove that it must of necessity do so. All astronomers assert that it does so. The unanimous verdict of the scientific world is thus rendered by Nicholl: "*As to the subject itself, the grand motion of the Sun, as well as its present direction, must be received now as an established doctrine of Astronomy.*"\* But the discovery was anticipated, three thousand years ago, by the Author of the Bible.

But, as will readily be perceived, the difficulty of determining either the direction or the rate of this motion is immensely increased in this case; for we are now not like persons riding in a carriage, watching the fixed lights in the street to determine our direction and rate of progress; but we are watching the lamps of a multitude of carriages, moving at various distances, and with various velocities, and, for any thing we can tell at first sight, in various directions. We are on board a steamer, and are watching the lights of a multitude of other steamers, also in motion; and it is not easy to find out, in the darkness, how either they or we are going. If each were pursuing its own independent course, without any common object or destination, the confusion would be so great that we could learn nothing of the rate or direction either of our own motion or theirs.

But astronomers are not content to believe that the universe is governed by accident. The whole science is based upon the as-

\* Humboldt's *Cosmos*, vol. 1, p. 139; Herschell's *Outlines*, 380; Kendall's *Uranography*, 205.

† *Architecture of the Heavens*, 9th ed., p. 252.

sumption, that a presiding mind has impressed the stamp of order and regularity upon the whole cosmos. They are deeply convinced that God's law extends to all God's creation: that all his works display his intelligence, as well as his power, and proceed according to a wise plan. Having seen that all the stellar motions previously known are orderly motions, in circular or elliptical orbits, and that the most of the solid bodies belonging to our own system revolve in one direction, they reasoned from analogy that this might be the case with the Sun and fixed stars, and went to work with great diligence, to see whether it was or not; and, by comparing a great multitude of observations, ancient and modern, made both in the northern and southern hemisphere, and on all sorts of stars, they have come to the unanimous conclusion, that our own Sun, and all the bodies of the Solar System, are flying northward, at the rate of a hundred and fifty millions of miles a year—a thousand times faster than a railway train—towards the constellation Hercules, in R. A. 259° Dec. 35°.

Further, as the direction of this motion is slowly and regularly changing, just as the direction of the head of a steamer in wearing, or of a railway train running a curve, it is certain that the Sun is moving, not in a straight line, but in a curve. The revolution of the Sun in such an orbit was known to the Author of the Bible when he wrote, "*his circuit is to the end of heaven.*" The direction of the circumference of a circle being known, that of its center can be found; for the radius is always a tangent to the circumference, and the intersection of two of these radii will be the center; so that, if we certainly knew the Sun's orbit to be circular, or nearly so, we could calculate the center. But as we do not certainly know its form, we cannot certainly calculate the center: we can only come near it. And as we know that the line which connects the circumference with the center of the Sun's orbit, runs through the group of stars known as the Pleiades, or the Cluster; and as all the stars along that line seem to move in the same direction—a direction different from that of the stars in other regions, just as they must do if they and we were revolving around that group—Argelander and others have concluded, with a high degree of probability, that the grand center around which the Sun and our firmament revolve, is that constellation which the Author of the Bible, more than three thousand years ago, called *kyme—the pivot*.

It would require a greater knowledge of electro-magnetism than

most of my readers possess, to explain the connection of the earth's rotation with the Sun's grand movement. I will merely state the facts. Electro-magnetism is induced by friction. The regions of space are not empty, but filled with an ether, whose undulations produce light; and this ether is sufficiently dense to retard the motions of comets. The friction produced by the passage of the Sun and Solar System through this ether, at the rate of 20,000 miles an hour, must be immense, and is one source of electricity, and the principal source of electro-magnetism. This kind of electricity differs from the other kinds, in that *its action is always at right angles to the current, and tends to produce rotation in any wheel, cylinder, or sphere, along whose axis it flows.\** The Sun, and all the planets traveling in the direction of their poles, the current is of course in the direction of the axis; and the result is, that while the Sun moves along his grand course, he and all the bodies of the system will rotate, by the influence of the electro-magnetism generated by that motion; and if he stops, his and their rotation stops too. Day and night on earth are produced by the Sun's motion causing the earth's rotation. You can see the principle illustrated by the child, who runs along the street with his windmill, to create a current, which will make it revolve. The Author of the Bible made no mistake when, desiring to lengthen the day, he commanded the Sun to stand still. It is not the Creator, but his correctors, who are ignorant of the mechanism of the universe.

Thus, these long-misunderstood and much-assailed Scriptures are not only vindicated, but far more than vindicated, by the progress of astronomical discovery. It not only proves the language of the Bible to be correct: it assures us that it is divine. The same hand which formed the stars to guide the simple peasant to his dwelling, at the close of day, and to lead the mighty intellects of Newton and of Herschell among the mysteries of the universe, formed those expressions which, to the peasant's eye, describe the apparent reality, and, to the astronomer's reason, demonstrate the reality of the appearance of the heavens, and are thus, alike to peasant and philosopher, the *oracles of God*. Here we have astronomical truth not discovered by astronomers, but revealed by

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\* Connection of the Physical Sciences, 171, 337, 315; Architecture of the Heavens, 286.

prophets—scientific discovery, in advance of science—predictions of the future progress of the human intellect, no less than revelations of the existing motions of the stars. He who wrote these oracles knew that the creatures to whom he gave them would one day unfold their hidden meaning (else he had not so written them), and, in the light of scientific discovery, see them to be as truly divine predictions of the advance of science, as the prophecies of Jeremiah and Ezekiel, read among the ruins of Thebes or Babylon, are seen to be predictions of the ruin of empires. Man's discoveries fade into insignificance in the presence of such unfolding mysteries; and we are led to our Bibles, with the prayer, "open mine eyes, that I may behold wondrous things out of thy law."

4. The ancient charter of the Church was written in the language of one of the most recent astronomical discoveries, thirty-six hundred years before Herschell and Rosse enabled us to understand its full significance: "He brought him forth abroad, and said unto him, '*Look now to heaven, and count the stars, if thou be able to number them.*' And he said unto him, '*So shall thy seed be.*'" \*

The scenery was well calculated to impress Abraham's mind with a sense of the ability of Christ to fulfil a very glorious promise, by a very improbable event; but the illustration was as well calculated as the promise to test the character of that faith which takes God's word as sufficient evidence of things not seen; for, if the promise was a trying test of faith, so was the illustration. Before this, God had promised that his seed should be as the dust of the earth; and afterwards he declared it should be as the sand of the sea shore: the well known symbol of a multitude beyond all power of calculation. To couple the stars of heaven with the sand upon the sea shore, in any such connection as to imply that the stars too were innumerable, or that their number came within any degree of comparison with the ocean sands, must have seemed to Abraham in the highest degree mysterious, even as it has appeared to scoffers, in modern times, utterly ridiculous; for, though the first glance at the sky conveys the impression that the stars are really innumerable, the investigations of our imperfect astronomy seem to assure us that this is by no means the case. And, as the patriarch sat, night after night, at his tent door, and, in obedience

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\* Gen. 15: 5.

to the command of Christ, counted the stars, and made such a catalogue of them as his Chaldean preceptors had used, he would very speedily come to the conclusion, that so far as he could see, they were by no means innumerable; for the catalogue of Hipparchus reckons only 1026 as visible to one observer, and the whole number visible in both hemispheres by the naked eye does not exceed 5000.\* And even if we suppose, what is very probable, that these old patriarchs had better eyes, as we know they had a clearer sky, than modern western observers, and that Abraham saw the moons of Jupiter and stars as small, still the number would not seem in the least degree comparable with the number of the sands upon the sea-shore—whereof a million are contained in a cubic inch,† a number greater than the population of the globe in a square foot, while the sum total of the human race, from Adam to this hour, would not approach to the aggregate of the sands of a single mile—for, though the stars of a size too small to be visible to our eyes, are much more numerous than the larger stars, yet even up to the range of view possessed by ordinary telescopes, they are by no means innumerable, nor nearly so. In fact, they are counted and registered, and the number of the stars of the 9th magnitude, which are four times as distant as the most distant visible to our eyes—so distant that their light is 586 years in traveling towards us—is declared to be exactly 37,739. Abraham's sense and Abraham's faith must have had many a conflict on this promise, as the faith and the sense of many of his children, especially the scientific portion of them, have since, when reading such portions as this and those other scriptures which represent it as an achievement of Omniscience, that "he counts the number of the stars, and calleth them all by their names."‡ It is indeed remarkable how God delights to test the faith of his people, and stumble the pride of fools, by presenting this mysterious truth of the innumerable multitude of the stars, in every announcement of the wonderful works of him who is perfect in wisdom. Infant astronomy stretched out her hands to catch the stars, and count them. Many a proud infidel wondered that Moses could be so silly as to suppose he could not count the stars, and the believer often

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\* Nicholl's *Architecture of the Heavens*, 32.

† Ehrenberg computes that there are 41,000,000 of the shells of animalculæ in a cubic inch of rotten stone.

‡ Ps. 147: 4.

wondered what these words could mean. But faith rests in the persuasion of two great truths: "God is very wise," and "I am very ignorant."

The increase of knowledge, by widening the boundaries of our ignorance, seemed for a time to render the difficulty even greater. The increased power of Herschell's telescopes, and his discovery of the constitution of the Milky Way, mark an era in the progress of astronomy, and enlarge our views of the extent of the universe, to an extent inconceivable by those who have not studied the science. Where we see only a faint whitish cloud stretching across the sky, Herschell's telescope disclosed a vast bed of stars. At one time he counted 588 stars in the field of his telescope. In a quarter of an hour, 116,000 passed before his eye. In another portion, he found 331,000 stars, in a single cluster.\* He found the whole structure of that vast luminous cloud which spans the sky, "to consist entirely of stars, *scattered by millions, like glittering dust*, on the back ground of the general heavens."

Yet still it was not supposed to be at all impossible to estimate their numbers. Even this distinguished astronomer, a few years ago, computed it at eight or ten millions. Schroeter allowed twenty degrees of it to pass before him, and withdrew from the majestic spectacle, exclaiming, "What Omnipotence!" He calculated, however, that the number of the stars visible through one of the best telescopes in Europe, in 1840, was 12,000,000—a number equalled by a single generation of Abraham's descendants—far below the power of computation, and utterly insignificant, as compared with the sands of the sea.

Had our powers of observation stopped here, the great promise must still have seemed as mysterious to the Astronomer, as it once seemed to the Patriarch. But if either the Father of the Faithful, or the Father of Siderial Astronomy, had deluded himself with the notion, that he fully comprehended either the words or the works of him who is wonderful in counsel, and excellent in working, and argued thence that, because the revealed words and the visible works seemed not to correspond, they were really contradictory, he would have committed the blunder of modern infidels, who assume that they know every thing, and that as God's knowledge cannot be any greater than theirs, every scripture which their

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\* Dick's Siderial Heavens, 59; Herschell's Outlines.



science cannot comprehend must be erroneous. The grandest truths, imperfectly perceived in the twilight of incipient science, serve as stumbling-blocks for conceited speculators, as well as landmarks of the boundaries of knowledge to true philosophers, who will ever imbibe the spirit of Newton's celebrated saying: "I seem to myself like a child gathering pebbles on the shore, while the great ocean of knowledge lies unexplored before me;" or the profound remark of Humboldt: "What is seen does not exhaust that which is perceptible."

But the progress of science was not destined merely to coast the shore of this ocean. In 1845, Lord Rosse, and a band of accomplished astronomers, commenced a voyage through the immensities, with a telescope which has enlarged our view of the visible universe to 125,000,000 times the extent before perceived, and displayed far more accurately the real form and nature of objects previously seen. Herschell's researches into the Architecture of the Heavens, which have justly rendered his name immortal as the science he illustrated, had revealed the existence of great numbers of *nebulae*—clouds of light—faint, yet distinct. He supposed many of these to consist of a luminous fluid, pretty near to us—at least, comparatively so; for to believe that they were stars, so far away as to be severally invisible in his forty feet telescope, while yet several of these clouds are distinctly seen by the naked eye, involved the belief of distance so astounding, and of multitudes so incredible, and of a degree of closeness of the several stars so unparalleled by any thing which even he had observed, that his imagination and reason failed to meet the requirements of such a problem. The supposition was, however, thrown out by this gigantic intellect, that these clouds might be firmaments: that the Bible word *heavens* might be literally plural; and more than that, he labored in the accumulation of facts which tended to confirm it. He disclosed the fact, that several of these apparent clouds, which, to very excellent telescopes, displayed only a larger surface of cloudy matter, did, in the reflector of his largest telescope, display themselves in their true character, as globular clusters, consisting of innumerable multitudes of glorious stars; and, moreover, that, stretching away far beyond star, or Milky Way, or *nebulae*, he had seen, in some parts of the heavens, "a stippling," or uniform dotting of the field of view, by points of light too small to admit of any one being steadily or fixedly examined, and too numerous

*for counting*, were it possible so to view them! What are these! Millions upon millions of years must have elapsed ere that faint light could reach our globe, from those profundities of space, though it travels like the lightning's flash. If they are stars, the sands of the sea-shore are as inferior in numbers as the surface of earth is inferior in dimensions to the arch of Heaven. But if these faint dots and stipplings are not single stars!—if they are star-clouds—galaxies—firmaments, like our Milky Way—our infinity is multiplied by millions upon millions! Imagination pants, reason grows dizzy, arithmetic fails to fathom, and human eyes fear to look into the abyss. No wonder that this profound astronomer, when a glimpse of infinity flashed on his eye, retired from the telescope, trembling in every nerve, afraid to behold.

And yet this astounding supposition is a literal truth; and the light of those suns, whose twilight thus bowed down that mighty intellect in reverent adoration, now shines before human eyes in all its noon-day refulgence. One of the most remarkable of these nebulae—one which is visible to a good eye in the belt of Orion—has been disclosed to the observers at Parsontown as a firmament; and minute points, scarce perceptible to common telescopes, blaze forth as magnificent clusters of glorious stars, so close and crowded, that no figure can adequately describe them, save the twin symbol of the promise, “the sand by the sea-shore,” or “the dust of the earth.” “There is a minute point, near Polaris,” says Nicholl, “so minute, that it requires a good telescope to discern its being. I have seen it as represented by a good mirror, blazing like a star of the first magnitude; and though examined by a potent microscope, clear and definite as the distinctest of these our nearest orbs, when beheld through an atmosphere not disturbed. Nay, though distances of an order I shall scarcely name, I have seen a mass of orbs compressed and brilliant, so that each touched on each other, *like the separate grains of a handful of sand*, and yet there seemed no melting or fusion of any one of the points into the surrounding mass. Each sparkled individually its light pure and apart, like that of any constituent of the cluster of the Pleiades.” \*

“The larger and nearer masses are seen with sufficient distinctness to reveal the grand fact decisive of their character, viz.: that

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\* Architecture of the Heavens, 62.

they consist of multitudes of closely related orbs, forming an independent system. In other cases we find the individual stars by no means so clearly defined. Through effect, in all probability, of distance, the intervals between them appear much less, the shining points themselves being also fainter; while the masses still further off *may be best likened to a handful of golden sand, or, as it is aptly termed, star-dust*; beyond which no stars, or any vestige of them, are seen, but only a patch or streak of milky light, similar to the unresolved portions of our surrounding zone.”\*

To say, then, that the stars of the sky are actually innumerable, is only a cold statement of the plainest fact. Hear it in the language of one privileged to behold the glories of one out of the thousands of similar firmaments: “The mottled region forming the lighter part of the mass (the nebula in Orion) is a very blaze of stars. But that stellar creation, now that we are freed from all dubiety concerning the significance of those hazes that float numberless in space, how glorious, how endless! Behold, amid that limitless ocean, every speck, however remote or dim: a noble galaxy. Lustrous they are, too: in manifold instances beyond all neighboring reality—beyond the loftiest dream which ever exercised the imagination. The great cluster in Hercules has long dazzled the heart with its splendors, but we have learned now that among circular and compact galaxies, a class to which the nebulous stars belong, there are multitudes which infinitely surpass it—nay, that schemes of being rise above it, sun becoming nearer to sun, until their skies must be one blaze of light—a throng of burning entireties! But, far aloft stands Orion, the pre-eminent glory and wonder of the starry universe! Judged by the only criticism yet applicable, it is perhaps so remote that its light does not reach us in less than fifty or sixty thousand years; and as at the same time it occupies so large an apparent portion of the heavens, how stupendous must be the extent of the nebula. It would seem almost as if all the other clusters hitherto gaged were collected and compressed into one, they would not surpass this mighty group, *in which every wisp—every wrinkle—is a sand-heap of stars*. There are cases in which, though Imagination has quailed, Reason may still adventure enquiry, and prolong its speculations; but at times we are brought to a limit across which no human faculty has the

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\* Architecture of the Heavens, 64.

strength to penetrate, and where, as now, at the very footstool of the secret THRONE, we can only bend our heads, and silently *adore*. And from the inner Adyta—the invisible shrine of what alone is and endures—a voice is heard :

“Hast thou an arm like God ?

“Canst thou thunder with a voice like him ?

“Canst thou bind the sweet influences of the Pleiades,

“Or loosen the bands of Orion ?

“Canst thou bring forth Mazzaroth in his seasons ?

“Canst thou guide Arcturus and his sons ? \*

“He telleth the number of the stars :

“He calleth them all by their names.

“Great is our Lord, and of great power ;

“His understanding is infinite.” †

Thus, nobly does Science vindicate Scripture, and display the wisdom and power of the Lord of Hosts, whose kingdom extends through all space, and endures through all duration. He who called these countless hosts of glorious orbs into being, is abundantly able to multiply to an equally incalculable number, the humble sands which line the oceans of terrestrial grace: the brilliant stars which shall yet adorn the heavens of celestial glory. All, of every nation, who shall partake of Abraham's faith, are Abraham's children. They are Christ's, and so Abraham's seed, and heirs, according to this promise.‡ When the great multitude, which no man can number, out of every nation, and tongue, and people, stand before the throne of God, and cause the many mansions of our Father's house to re-echo the shout, “Salvation to our God which sitteth on the throne, and to the Lamb,” the answering hallelujah's of the most distant orbs shall expound the purport of that solemn oath to Abraham and Abraham's seed: “By myself have I sworn, saith the Lord, because thou hast done this thing, and hast not withheld thy son, thine only son, from me; that in blessing I will bless thee, and *in multiplying I will multiply thy seed, as the stars of the heaven, and as the sand which is upon the sea-shore.*” §

5. It is not probable that the mysteries of the distant heavens, or of those future glories of the redeemed which the Bible employs

\* Architecture of the Heavens, 144.

† Job, 38 : 31. Ps. 147 : 4.

‡ Gen. 22 : 16.

§ Gal. iii, 14 : 29.

*them to symbolize*, will ever be fully explored by man, or adequately apprehended in the present state of being. But it is most certain that God would not have employed the mysteries of astronomy so frequently as the symbols of the mysteries of the glory to be revealed, had there not been some correspondence between the things which eye hath not seen, and these patterns shown in the mount. So habitual, indeed, is the scripture use of these visible heavens as the types of all that is exalted, pure, cheering, and glorious, that, to most christians, the word has lost its primary meaning, and the idea first suggested to their minds by the word *heaven* is, that of future glory; yet their views of the locality and physical adornments of the many mansions of their Father's house, are dim and shadowy, just because they do not acquaint themselves sufficiently with the Divine descriptions in the Bible, and the Divine illustrations in the sky. The Bible would be better understood were the heavens better explored. "I go," said Jesus, "to prepare a *place* for you." The bodies of the saints, raised on the resurrection morn, will need a *place* on which to stand. The body of the Lord, which his disciples handled, and "saw that a spirit had not flesh and bones, as they saw him have," is now resident in a place. Where he is, there shall his people be also. Why, then, when the Bible employs all that is beauteous in earth, and glorious in heaven, to describe the adornments of the palace of the King of kings, should we hesitate to believe that the power and wisdom of God are not exhausted in this little earth of ours, but that other worlds may as far transcend ours in glory, as many of them do in magnitude?—or, to allow that the glorious visions of Ezekiel and John were not views of nonentities, or mere visions of clouds, or of some incomprehensible symbols of more incomprehensible spiritualities, but actual views of the existing glories of some portion of the universe, presented to us as vividly as the dullness of our minds and the earthliness of our speech will permit? It is certain that the recent progress of astronomical discovery has revealed celestial scenery which illustrates some of the most mysterious of these visions.

It has long been known, that "one star differeth from another star in glory," and that the orbs of heaven shine with various colors. Sirius is white, Arcturus red, and Procyon yellow. The telescope shows all the smaller stars in various colors. Under the clear skies of Syria their brilliance is vastly greater than in our

climate. "*One star shines like a ruby, another as an emerald, and the whole heavens sparkle as with various gems.*"\* But the discovery of the double and triple stars has added a new harmony of colors to these coronets of celestial jewels. These stars generally display the complementary colors. If the one star displays a color from the red end of the spectrum, the other is generally of the corresponding shade, from the violet end. For instance, in  $\alpha$  Cygni, the large star is yellow, and the two smaller stars are blue; and so in others, through all the colors of the rainbow. "It may be easier suggested in words," says Sir John Herschell, "than conceived in imagination, what a variety of illumination two stars—a red and a green, or a yellow and blue one—must afford a planet circulating around either, and what cheering contrasts and grateful vicissitudes a red and a green day, for instance, alternating with a white one, and with darkness, must arise from the presence or absence of one, or other, or both, from the horizon."† But suppose one of the globular clusters—for instance, that in the constellation Hercules—thus constituted; its unnumbered thousands of suns, wheeling round central worlds, and exhibiting their glories to their inhabitants: "skies blazing, with grand orbs scattered regularly around, and with a profusion to which our darker heavens are strangers;" the overhead sky, seen from the interior regions of the cluster, *must appear gorgeous beyond description.*" In the strictest literality it might be said to the dwellers in such a cluster, "Thy sun shall no more go down, neither shall thy moon withdraw herself." The surrounding walls of such a celestial palace must seem indeed "garnished with all manner of precious stones." Sapphire, emerald, sardius, chrysolite, and pearl, must seem but dim mirrors of its glorious refulgence. Under its ever rising suns the gates need not be shut at all by day, "for there shall be no night there." That glorious place now exists, though far away.

But the Lord of these Hosts has said, "Behold, I come quickly." He will not tarry. A thousand times faster than the swiftest chariot, our Solar System and the surrounding firmament wing their flight towards that same glorious cluster in Hercules. As our firmament approaches, under the guidance of Omnipotent wisdom, it too must fly to meet our Sun, with a velocity increasing with an incalculable ratio. The celestial city will then be seen to descend

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\* Architecture of the Heavens, 217.    † Architecture of the Heavens, 77, 130.

from heaven. Once within the sphere of its attractions, our Sun and surrounding planets will feel their power. Their ancient orbits and accustomed revolutions must give way to the higher power. Old things must pass away, and all things become new. A new heaven, no less than a new earth, will form the dwelling of righteousness.

These are no longer the visions of prophecy merely, but the sober calculations of mathematical science, based upon a foundation as solid as the attraction of gravitation, and as wide as the existence of that ether whose undulations convey the light of the most distant stars; for, so surely as that attraction is efficient, must all the firmaments of the heavens be drawn more closely together; and as certainly as they revolve not in empty space, but in a medium capable of retarding Erecke's comet three days in every revolution, must that retarding medium bring their revolutions to a close. "And so," said Herschell, casting his eye fearlessly towards future infinities, "we may be certain that the stars in the Milky Way will be gradually compressed, through successive stages of accumulation, until they come up to what may be called the ripening period of the globular cluster." Unnumbered ages may be occupied with such a grand evolution of celestial progress, beyond our powers of calculation; but will the changes of created things, even then, have come to an end? Hear again the voice, not of the prophet, but of the astronomer: "Around us lie stabilities of every order; but it is *stability* only that we see, not *permanence*. As the course of our enquiry has already amply illustrated, even majestic systems, that at first appear final and complete, are found to resolve themselves into mere steps or phases of still loftier progress. Verily, it is an astonishing world! Change rising above change—cycle growing out of cycle, in majestic progression—each new one ever widening, like the circles that wreath from a spark of flame, enlarging as they ascend, finally to become lost in the empyrean! And if all that we see, from earth to sun, and from sun to universal star-work—that wherein we best behold images of Eternity, Immortality, and God—if that is only a state or space of a course of being rolling onward evermore, what must be the Creator, the Preserver, the Guide of all!—He at whose bidding these phantasms came from nothingness,

and shall again disappear;—whose name, amid all things, alone is *Existence*—I AM THAT I AM?

“Of old hast thou laid the foundations of the earth,

“And the heavens are the works of thy hands;

“They shall perish,

“But thou shalt endure;

“Yea, all of them shall wax old, like a garment:

“As a vesture shalt thou change them, and they shall be changed;

“But thou art the same,

“And thy years shall have no end.

“The children of thy servants shall continue,

“And their seed shall be established before thee.”

PSALM cii: 25.

“And I saw a new heaven, and a new earth;

“For the first heaven and the first earth were passed away,

“And there was no more sea.

“And I, John, saw the Holy City, New Jerusalem,

“Coming down from God, out of heaven,

“Prepared, as a bride, adorned for her husband.

“And I heard a great voice, out of heaven, saying,

“Behold the tabernacle of God is with men,

“And he will dwell with them,

“And they shall be his people,

“And God himself shall be with them, and be their God.”

REVELATIONS, xxi.

Reader, is this glorious heaven your inheritance? Is this Unchangeable Jehovah your God? Are you looking for and hasting unto the coming of the day of God? Is it your daily prayer, Even so, Lord Jesus, come quickly!

## NOTICE.

April, 1857.

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